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To thee, sweet girl, this second ring,
A token and a pledge I bring;
With this I wed, till death us part,
Thy riper virtues to my heart.
Those virtues which before untry'd,
The wife has added to the bride;
Those virtues whose progressive claim,
Endearing wedlock's very name,

My soul admires, my song approves,
For friendship's sake as well as love's.
For why?—They show me hour by hour,
Honour's high thought, reflection's power;
Discretion's deed, sound judgment's sentence;
And teach me all things—but repentance,

DISCOVERIES AND IMPROVEMENTS, IN ARTS, MANUFACTURES, AND AGRICULTURE.

Temporary Rick to secure Corn in sheaves in the fields, till quite dry; also Clover, Peas, and Beans; by William Jones, Esq., of Foxdown Hill, near Wellington, Somersetshire.

(Extracted from the Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce.)

THE very unusual quantity of rain that fell during the months of August and September last, with scarcely two days of dry weather following, in this neighbourhood, put farmers to the necessity of having recourse to various modes of preserving their corn; and as I understand the Society of Arts has offered a gold medal for the cheapest and best mode of harvesting corn, and also for making hay in wet weather, superior to any hitherto practiced, I beg leave to communicate some experiments I made last summer, and the result of them. In the first place, I put some wheat in small round ricks, or windrows, made in the common way of this county; but afterwards recollected, that the uncommon wetness of the ground might render the under part damp, I thought it prudent to examine them, (about ten days after they were set up,) and found my apprehensions so well founded,

that I had the whole spread abroad; and have no doubt, that, if they had remained a little longer, the corn would have been materially injured, not the bottom only, for it had contracted dampness a great way up the ricks, insomuch that I turned my attention to devise some better mode of preserving my barley, in case the weather continued so rainy, as it afterwards proved. I had observed, in some wet seasons before this, that many of our farmers, not being able to get their barley dry enough to put into a large rick, had set up narrow ricks, containing the produce of an acre or two each, in different parts of the same field in which it was grown, for the sake of expedition; and though some straw was put under them, yet the bottom contracted a great degree of dampness, so as to occasion it to smell old, and the clover was killed where these ricks had stood. My object was to prevent both these injuries; and it occurred to me, that four gate-hurdles would answer both purposes, by setting the two outside ones perpendicular, and two middle ones inclining against and supporting each other. These hurdles are usually eight feet long; the two heads, in which the four bars are mortised, have pointed ends, of about a foot and a half long: the two outside ones are to be forced

into the ground, nearly to their full length, so that the middle brace may rest on the ground, to afford some support, and the two middle ones about six inches, to keep them steady. The foot of the second hurdle should be set two feet from the foot of the first, the third three feet from the second, and the fourth two feet from the third, making seven feet, and occupying a space of seven feet by eight, for barley or oats, but wheat, being longer in the straw, requires the distance to be wider, viz.—three feet from the first to the second, three feet from the second to the third, and three feet from the third to the fourth, which will be nine feet by eight.

It will be proper to put seven or eight small stakes, (a little bigger than a man's thumb,) from the second bar of the first hurdle, to the second bar of the second hurdle, and from the second bar of the third to the second bar of the fourth, to support the sheaves from the ground, to admit air under, and prevent injury to the growing clover; or small poles may be used, extending from one outside hurdle to the other. The small stakes are to be placed so as to prevent the sheaves touching the ground, for there will be but a slight pressure on them, since the ground end of the sheaves are to be put against the hurdle, and the ears of the corn a little elevated to rest against the other hurdles; so that the ears of the corn will be all within-side, and have the benefit of the air. It is to be observed, that two hurdles being but six inches in the ground, and the other hurdles nearly eighteen inches, that the two former will be a little higher than the two latter, which is necessary for two reasons; one is, that the higher these are, the higher the air is admitted to the middle of the rick, and the more they elevate the tops

of the sheaves in the middle, for the ground ends should be lowest to shoot off the rain. But as it will be found, that after two or three rows are placed around the tops of the hurdles, (for the ricks should be circular,) that the ground ends of the sheaves being largest, the tops will become nearly level, when it will be necessary to put four sheaves in the middle, horizontally, forming a square, opening in the centre, which will admit air from the top of the middle hurdles, through this space, to the middle of the rick, as the ears of each sheaf are just to meet only in the middle, resting on these four sheaves*, which will give such an elevation to the tops of them, that the ground ends will be sufficiently inclining downwards to shoot off any rain that may fall. In forming the roof, the sheaves are of course to be put farther in every time they are put around, till the roof terminates in a point, when two sheaves, with the tops downwards, spread abroad, and bound with a straw band, will secure it from a great deal of rain; but if the corn is to remain out long, a little reed or thatch may soon be put on each rick.

The weather being so rainy for some days after my barley was cut, with every appearance of more rain, I determined, on having a few hours intermission of rain, to get the middle of the field, which was a little more dry than the rest, and to put it in small ricks, containing more than the produce of an acre, on these hurdles in the same field; it was in such a damp state, as to be totally spoiled in a common-rick, but was

* If the corn should be very damp and the rick made high, four other sheaves may be put higher up, to convey a greater circulation of air, and operate as a bond to connect the sheaves in the middle, so that they cannot possibly slide outwards.

taken from these ricks into a barn in the month of January last, perfectly dry, the straw much better than could have been expected, the grain good, having been proved to grow well; for having some doubt, on account of being put together so damp, I had it first tried, by putting a few grains in a cloth into the earth, and have since sown it, and no other this spring, and I never had a better prospect of a good crop. The remaining part of the barley that was left on the ground was not taken in till ten days afterwards, the grain much grown, a great deal wasted by frequently turning, and the straw spoiled.

I flatter myself, it will be admitted, that in wet seasons, or when harvest is so late, that as the days decrease, the dews increase, and of course remain so long, that there are but few hours in a day for drying, even if there should be no rain, that this method will afford perfect security to corn that is cut dry, and put up in this manner immediately from the scythe or sickle, because, if there should be grass in it, the ground-end of every sheaf will be without-side, exposed to the sun and air to dry; and as for the grain, no part of it can get damp, because the ears but just meet in the middle, through which the air passes from the bottom to the top, sufficiently to dry it. I have mentioned sheaves, because in this county barley and oats are generally bound as well as wheat, but both the former may be placed in these ricks, without binding, as I had some barley put in one of them, by way of experiment, and think it to be the better mode when there is much grass in it, by carefully keeping the ears together when carried to the hurdles, where a man is ready to put it up to another on the top, and to place the ears inwards, and it is done in

as short a time as the like quantity is put on a waggon, with this advantage, that, whereas a waggon with three or four horses go over the clover, to the great injury of it in wet weather, by this method the corn is carried by women or children in their arms, to the hurdles, without the least injury to the clover, a consideration fully adequate to a little extra expense, if any, besides that of being more expeditiously secured; for every practical farmer will be sensible, in how short a time an acre of corn may be carried from the circumference of an acre to its centre. As to the time of fixing these hurdles, I have ascertained that two people can fix them in five minutes, and one rick would contain the produce of two acres of barley or oats. The other advantages, besides the corn being thus sooner secured, are, that no more attendance on it is required, so that a farmer's attention may be better directed to his other harvest concerns, and that one or two of these ricks at a time, (as may be convenient,) may be taken into a barn to thresh, whereas a part of a large rick cannot be taken in, without the trouble and expense of threshing the remainder, and be subject to the risk of rain, before it may be covered again.

I trust it will be seen, that by this plan, there must be a great saving of the quantity, as well as preservation of the quality of grain, which is known oftentimes to shed a great deal, by being frequently turned to get dry. Before I thought on this expedient, (last barley harvest,) I am clear, that a field of peas of mine required to be turned so often, that more shed out than were sown; and a farmer in this neighbourhood had a good crop of eight acres of vetches reduced to sixty bushels, by so frequently turning them for three

weeks, without getting them dry at last; whereas an acre or two might have been taken up in this way a few days after they were cut, and the seed would have got sufficiently hard, but the greater part of these were so soft, as to be much bruised in threshing, and it was to be feared, a great part of them would not vegetate. I had an opportunity of knowing the quantity, having the tithe of them, and proving the injury by the loss of my crop in sowing them, insomuch that the land has been since ploughed.

Although I have not tried it, yet I think it is not to be doubted, but that this mode may be applied with equal advantage to clover-hay, and clover-seed, before it may be dry enough to put into a large rick, by being placed in this situation to dry, without being so frequently turned as to deprive the hay of its finest parts, and subject the seed to great waste. In cases also when meadow-hay may be dry enough to put in large cocks on the appearance of rain, how much injury do they receive by the bottom being rendered so wet, as to occasion a dampness some way up, and require much time to throw abroad to dry! Whereas, in the same state of dryness, how many of such cocks may be put on four hurdles? And the bottom, instead of being wet and injured, will be perfectly dry, having air circulating under it, and from the two middle hurdles quite to the top; if a sheaf of reed was to be drawn up through it, as the hay got higher, a bundle of straw on the top would secure it from rain; or instead of a reed-sheaf drawn up, a couple of small faggots of wood, or three or four poles bound together, and placed horizontally about the middle of the rick, to admit air at each end, and render it dry

enough to be carried on to a rick without farther trouble or risk.

Hay is known to receive injury not only from rain, but even from fervent sunshine, when nearly dry, if not frequently turned, as may be observed by the change of colour and loss of smell, which many farmers in this neighbourhood experienced in the summer of 1809, for want of hands to turn it sufficiently. I have seen a decoction of such hay made in a tea pot, and compared with a decoction of the like quantity of good hay in another; the former was very deficient both in colour and taste to the latter, and the quality of it, of course, much deteriorated.

We know, that straw, particularly of barley or oats, will be much injured by being long on the ground, exposed to soaking dews, and perhaps alternate rain and sunshine; and may it not, when protected from them by this mode, be far superior for cattle to what we are at present aware of? Besides the advantages of grain, hay, and straw, being thus better preserved, and less expense of labour than by repeatedly turning in rainy seasons, there is another advantage, of no small consequence, that the crops may be removed, and put on hurdles in another field, (without any hindrance to sheep feeding therein,) when the land from whence they were taken may be immediately ploughed; for instance, after pease, to facilitate a better fallow, (than if delayed,) to be succeeded by wheat, and ploughing clover lays for wheat, and also preparing land for turnips after yetches, to accelerate the sowing; in which case, the delay of a few days has frequently occasioned a total loss of the crop.

It is an essential consideration, that the expense attending improve-

ments should not counterbalance their utility: and, I flatter myself, there can be no objection to this mode on that score. Because gate-hurdles are useful appendages to a farm, in any county, for other purposes, when not used on this occasion, and in this and other counties are requisite for dividing turnips for sheep; and, as to expedition, which is of great importance in harvest concerns, four of these hurdles, (as I have already observed,) may be fixed in five minutes.

Observation—In countries, where hurdles are not in use, might not branches of trees, or any number of the farm-yard be substituted?

*Extracts from an Essay on Irrigation;
by the Rev. G. T. Hamilton.*

(From the Letters and Papers of the
Bath and West of England Society.)

Sec. I. *Influence of Water on Vegetation*

THE elements of fire and water, though in themselves of tremendous and destructive power, may be so managed and directed as to be rendered extremely subservient to the use and comfort of men. By the wisdom of Providence, the improvement of the material world depends on the combined efforts of human genius and labour; and philosophy must be invoked for the amelioration of the blessings of nature. By her aid, that which we should otherwise deplore as an evil is often converted into a benefit; and that which one person rejects as a nuisance, is caught and employed by another as a source of inestimable advantage. The element of water affords a continual illustration of the truth of this remark. The influence of water on vegetation is so obvious and striking, that since

the experiments of Van Helmont, Boyle, and Du Hamel, most naturalists have considered it to be the *primum mobile* of growth in plants, and the most useful material which enters into their composition. Indeed all the experiments of naturalists and husbandmen unite in proving the vast utility of water; and its superior importance over every other material for promoting vegetation. The general fertility of moist situations; the rich production of irrigated meadows; the superior productiveness of lands situated upon brooks and rivulets, over such as are dry and arid; and the astonishing fertility of Egypt, by the periodical inundations of the Nile, justly considered by the natives as the peculiar gift of Heaven; afford incontestible proofs of the great utility of water in enriching the ground, and promoting the vegetative process in plants. The manner in which water acts upon the organs of plants and vegetables, has been accounted for by that eminent inquirer into nature, M. Fourcroy, in the following manner. The water is absorbed by the roots of the plant, and passes up through the stems into all the different parts, exudes from the leaves, and returns to the atmosphere; and in proportion as the roots are less or more furnished with moisture, every tree or plant grows and passes through its vegetative functions with more or less vigour. Water, thus filtrating through the roots of plants, becomes the vehicle for carrying into their vessels or organs every alimentary substance that is contained in the earth or soil in which they grow, and which it is capable of dissolving. Hence, in proportion to the quantity of water absorbed by plants, the nourishment derived from those other matters which it conveys must be the more abundant. In thus entering perpet-